Directions for Collecting, Pressing, and Mounting Plants.

By W. H. GRIFFIN.

Collecting.—For collecting purposes it is better to use a large vasculum. Messrs. Watkins and Doncaster, of 36, Strand, W.C., supply one to order, $18 \times 9 \times 4$ inches, which we have found a convenient size. Do not collect terrestrial plants when they are sodden with rain or dew. If only a few small plants are gathered in hot weather put some small branches of elm, or leaves of dock, or other fresh herbage into the vasculum with them to keep them fresh. Plants which have become withered before pressing may be revived by immersing them in a bath of warm water. If much withered a little camphor-water added to the bath will stimulate revival, and prevent subsequent mildew. After an hour's immersion lay the plants upon dry cloths to drain in a warm atmosphere. In an hour they will be quite restored.

Preparations for Pressing.—Wash earth from roots, dry with a soft cloth. Cut large plants down to pieces not exceeding 14×9 inches when spread out. Flatten thick succulent stems with a large pair of pliers, otherwise they will prevent pressure falling upon the leaves. For the same reason cut away about half of thick woody stems at the back. To prevent over-much lapping, remove superfluous twigs and leaves with scissors. Cut away the tubers of orchids, etc., and scoop out the starch from the half left on the stem. Wrap this half in hardish paper to prevent the starch from adhering to the drying paper when pressed and spoiling it. Soft berries should be removed, and, when partially withered, pressed separately under light pressure. When the flowers are fairly large enclose each one between white writing-paper to keep it from contact with the foliage. In the case of large delicate flowers it is advantageous to remove them altogether, press them separately, between white paper, and restore to original position in mounting. It is advantageous to immerse all portions, except the flowers, of many plants for 60 seconds in fast-boiling water. This is necessary with all the *Orchidaceae* to prevent the leaves turning black; also with the *Orobanchaceae*, and other root parasites; with the *Ericaceae* to prevent the leaves falling off; with *Crambe maritima*, and other sub-maritime species, having coriaceous leaves to prevent subsequent exudation of saline matter. The colours of the flowers of orchideous plants will be much better preserved by the following treatment:—Make up a mixture of one part of sulphurous (not sulphuric) acid and two parts of methylated spirit. Immerse the inflorescences in this mixture until the flowers are bleached. Then immerse the stems and leaves in fast-boiling water for 60 seconds, and press in the manner presently described. As the plants are

dried in pressing, the colour will return to the flowers. Write a temporary label for each species, with its name, locality, date, and name of collector, to be retained with the specimens until they are finally mounted.

Pressing.—The apparatus, etc., required will be two dozen or more wood pulp-cards about three sixteenths of an inch thick, and fifteen by ten inches in superficies. A few quires of absorbent botanical drying paper, fifteen by ten inches, or a larger quantity of old newspapers cut to the same size. The drying-paper should be kept dry and free from dust when not in use. A screw press sufficiently large to cover sixteen by eleven inches. A letter-copying press, linen press, or clothes press will answer. If a press has to be obtained, then have two pressure boards made sixteen by eleven inches and half-an-inch thick, and a pair of screw clamps to receive them. Whatever form of pressure is used, it should be equal to at least two hundred-weights. A pair of brass or steel forceps is necessary for use in laying out. The points should not be sharp, or they may puncture the leaves. Half-a-dozen pieces of lead about two inches square and half an inch thick covered with glazed calico. Lay your specimen down upon three thicknesses of botanical drying paper, or twelve thicknesses of newspaper. Then with the aid of the forceps and lead weights arrange branches, leaves, and flowers in a natural and graceful position, with as little overlapping as possible. It is well to enclose large flowers between the fold of a piece of unglazed white paper which can remain undisturbed until the specimen is mounted. This aids in preventing discoloration. Insert the temporary label, and then cover with the same number of sheets of drying paper.

In the case of seeding specimens of *Trifolium*, *Medicago*, and other plants in which it is not desirable to unduly flatten the seed-vessels, use double the number of drying-sheets, and the seed-vessels will sink into them, while, at the same time, sufficient pressure will fall upon the leaves. Place one of the thick cards upon the top, and proceed in the same manner with the whole collection. Then put the parcel into the press, and screw down firmly, but yet not to the full extent of the press. After two or three hours take them out and deal with each sheet as follows:

Very carefully remove the covering papers. If the one next the specimens sticks to the leaves, roll it off from the bottom upwards, the object being not to disturb the arrangement of the leaves, etc. The pressure will have rendered the leaves pliable, and they can now be finally arranged with the forceps better than at first. Then lift the sheet containing the specimens, and that one only, and place it upon the same number of dry sheets as before, and cover it with an equal number and a card as at first. All the sheets except the two immediately next the specimens must be changed for perfectly dry sheets at least once a day for ten days or a fortnight. Small plants may be sufficiently dry to come out of press in ten days. Those

with thick succulent leaves may require three weeks. A good test is to place the bared elbow upon the plant. If it does not feel cold it is dry enough to come out.

Do not be induced to use heated drying sheets. The heat will engender fermentation and blacken the foliage.

The use of chloride of mercury to prevent mildew and insect ravages is objectionable and unnecessary. If, in the daily change, any sign of mildew should appear, then apply some methylated spirit with a soft brush.

When the plants are finally removed from the press, the top covering paper can be taken away and a little powdered crystal napthaline sprinkled over each sheet. They are then laid one upon the other and tied up in bundles between two cards as semi-dry. The bundles must be kept in a dry place for at least four months before the plants are mounted. If any shrinking were to take place after mounting, either the mounting paper would be buckled, or the laminæ of the leaves be broken.

Mounting.—The most convenient size for mounting paper is 15×10 inches. It should be sufficiently stout for a sheet of that size to retain a horizontal position when held out lengthways at two inches from the bottom. It is best to use a paper of good quality, because the cheap pulp-papers drop to pieces in a few years. Many botanists affix the specimens to the paper with numerous narrow bands gummed down, but we have found that after a year or two specimens so affixed lose some of their leaves, etc., every time they are handled. It is far better to glue them down all over. After a little practice the operation will be found quite easy. French glue is the best for the purpose, made in a small ordinary carpenter's glue-pot, and used hot with a small soft hog's-hair brush. Lay the specimen down on a mounting sheet in the exact position you wish it to finally assume, and, with a soft lead pencil, make a tick on the paper to shew where the base, and the extreme points at top and sides are to fall. Take the specimen up in the forceps and lay it *upside down* upon a few sheets of very common blotting-paper. Then carefully glue it over, except the flowers if they are large and delicate, dabbing, and not dragging, the brush. Pick it up with the forceps, lay it down *face upwards* to the pencil ticks, place some clean blotting-paper over it and firmly press it down, at first with the heel of the hand, and then by working the fingers in between the branchlets. To fasten down large delicate flowers which have not been glued at the back it is safest to place a little glue on the mounting sheet immediately beneath each flower, and then press it down with clean blotting-paper. When the blotting-paper is lifted it is probable that some glue will be seen to have oozed out here and there, or smears of glue may have been made in laying the specimen down. After a few minutes this glue will have chilled and jellied, and most of it can then be picked off with a thin pocket-knife. Any remaining traces, or any glue on

the leaves can be finally washed off with hot water applied with a camel-hair brush, and then dried off with blotting-paper. In the case of large coarse plants the glue needs to be fairly thick, but for small plants with fragile leaves it must be thinned down. When convenient it is well to keep the glue-pot standing over a gas or spirit stove. The glueing should be done in a warm room with a temperature not below 60°F.

The blotting-paper used for glueing out may be used several times if permitted to become dry each time before using.

The process with grasses, sedges, etc., is somewhat different, because if several long, flag-like, leaves were glued at once they would get entangled and messed in picking up and turning the plant. Therefore, at first do not glue more than an inch or so of the base of the plant. When that has been placed face upwards in its proper position on the mounting sheet put a weight upon it. Then spread some glue upon one side only of a knife-blade and apply the glue from below to each leaf separately, placing it in position and rubbing it down before doing the next.

Every species and variety should be represented by seeding, as well as flowering, specimens, and it is well to have several sheets of each gathered as far as possible from different localities.

A space should be left at the bottom right-hand corner of the sheet to receive a permanent label. Most botanists have blank labels printed specially for their own use. The form given below is a useful one, and occupies only a small space :—

HERB. (*Owner's Name*).

	*	
Order		
Genus		
Species.....		
Variety.....		

County..... Place.....

Geological Formation.....

Approx. Altitude.....

Collected by.....

Date.....

* No. in G. C. Druce's *List of British Plants*.

For a catalogue of the Herbarium, it is convenient to use *The London Catalogue of British Plants*, or some similar publication. The most comprehensive list is the *List of British Plants*, by G. C. Druce, Oxford, Clarendon Press, January, 1908. This includes numerous casual aliens which should be represented as far as possible. The label given above is adapted to that list. It adds greatly to the value of a Herbarium to have a sheet of seedlings of the species represented, taken at different stages of growth. Members of Affiliated Societies, who may decide to join in the Seed Exchange mentioned elsewhere in these *Transactions* (see p. xvii.), will presently receive a list of names of the proposed participants, with instructions for growing and preserving seedlings, so that it is unnecessary to give such instructions here.